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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/783,135	02/15/2001	Yang-lim Choi	Q60575	1486

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EXAMINER

HIRL, JOSEPH P

ART UNIT	PAPER NUMBER
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2121

DATE MAILED: 01/16/2004

12

Please find below and/or attached an Office communication concerning this application or proceeding.

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Office Action Summary

Application No.

09/783,135

Applicant(s)

CHOI ET AL.

Examiner

Joseph P. Hirl

Art Unit

2121

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 07 November 2003.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-16 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-16 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. §§ 119 and 120

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
- 1) ☒ Certified copies of the priority documents have been received.
 - 2) ☐ Certified copies of the priority documents have been received in Application No. _____.
 - 3) ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 13) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application) since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.
- a) ☐ The translation of the foreign language provisional application has been received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121 since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.

Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 8,11.
- 4) ☐ Interview Summary (PTO-413) Paper No(s). _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

DETAILED ACTION

1. This Office Action is in response to an AMENDMENT entered November 7, 2003 for the patent application 09/783,135 filed on February 15, 2001.
2. The First Office Action of July 7, 2003 is fully incorporated into this Final Office Action by reference.
3. The claims and only the claims form the metes and bounds of the invention. "Office personnel are to give the claims their broadest reasonable interpretation in light of the supporting disclosure. *In re Morris*, 127 F.3d 1048, 1054-55, 44USPQ2d 1023, 1027-28 (Fed. Cir. 1997). Limitations appearing in the specification but not recited in the claim are not read into the claim. *In re Prater*, 415 F.2d, 1393, 1404-05, 162 USPQ 541, 550-551 (CCPA 1969)" (MPEP p 2100-8, c 2, I 45-48; p 2100-9, c 1, I 1-4). The Examiner has full latitude to interpret each claim in the broadest reasonable sense. Examiner will reference prior art using terminology familiar to one of ordinary skill in the art. Such an approach is broad in concept and can be either explicit or implicit in meaning.
4. Examiner's Opinion: The specification simply does not provide sufficient instruction to allow one of ordinary skill in the art to replicate the invention without undue experimentation. Paragraph 3 above is very important in the examination of an applicant's disclosure. Claims written in a general manner are vulnerable to prior art of many configurations. Applicant should fully understand that the Examiner has a serious obligation to fully implement Paragraph 3.

Response to Arguments

4. Regarding Form PTO-948 concerning drawings, such review by the Official Draftsperson is not performed prior to the Examiner establishing allowance.

5. Applicant's arguments filed on November 7, 2003 related to Claims 1-4 have been fully considered but are not persuasive.

Concerning claim rejections under 35 USC 112, first paragraph

In reference to Applicant's argument:

Applicants submit that the disclosure complies with the enablement requirement because the claims contain subject matter described in the specification in such a way as to enable one skilled in the art to make and/or use the invention. The Examiner states that "it is the intention of the Invention to transform a statistical distribution into multidimensional statistical distribution (joint density function) from which the joint density functions related to the dimensionality can be identified. Integrating across the space of the joint density function, one can arrive at the marginal density function and hence one begins to develop the grid. This process is not straightforward and would require extensive experimentation to replicate the invention. A grid is two-dimensional and yet the process is n dimensional."

To the contrary, Applicants submit that the specification discloses indexing feature vector data space with high dimensionality by measuring the statistical distribution of feature vector data. (page 7, lines 10- 11). Specifically, in an embodiment, the statistical distribution of high dimensional data is realized through the use of a probability distribution function denoted by $p_j(x)$ for data in one dimension, dimension i . (page 8, lines 14-15), "[f]ollowing the assumption that data on each dimension are independent of each other, the algorithm described hereinafter can be applied to each dimension independently." (page 8, lines 16-18). The grids mentioned on page 7 are formed from the marginal density function which is, in turn, measured from the statistical distribution of the one dimensional feature vector data, not the multi-dimensional feature vector data space (page 7, lines 9-16).

Examiner's response:

Paragraph 3 above applies. The Examiner observes that the applicant has a probability distribution $p_i(x)$ for each dimension i . Transform means indexing.

Multidimensional statistical distribution follows from the plurality of the probability distributions that are formed from the plurality of dimensions. High-dimensionality is equivalent to multidimensionality. Applicant confirms Examiner's statement. Further,

the applicant has not worked through a detailed example to illustrate the invention.

Results without details of how such results were arrived confirm the Examiner's concern regarding the lack of enablement.

In reference to Applicant's argument:

As for the drawing labeled 20 as shown in FIG. 2, Applicants submit that the reference number 20 refers to an exemplary representation of the entire feature vector space in 2 dimensions.

Examiner's response:

The Examiner considers Fig. 2 to represent a "whatever" that is not novel and certainly obvious.

In reference to Applicant's argument:

In response to the Examiner's statement that "Fig. 2 does not convey much information and [with] certain[ty] since the marginal distribution comes about from the integration of the joint density function, the question of how uniformity is achieved is not sufficiently conveyed from the specification," Applicants submit the following as an explanation:

If the estimated marginal distribution is $f(x)$, where $0 < x < A$, and N is the number of grids (predetermined), then one can find x_i , such as $0 = x_0 < x_1 < x_2 < x_3 \dots < x_{N-1} < x_N$ with the property such that the integral of $f(x)$ from x_i to $x_{i+1} = (\text{integral of } f(x) \text{ from } 0 \text{ to } A)/N$ for all i ($i=0, 1, \dots, N$). In other words, estimated marginal distributions are divided into a plurality of grids, where, the probabilities of the data being disposed in each grid are substantially the same. Uniformity means that the number of data in each grid are almost same for all grids.

Examiner's response:

The applicant is now beginning to see the Examiner's concern. It took the above explanation to convey a knowledgeable meaning to Fig. 2 and the concept of uniformity.

Unfortunately for the applicant, the above information is not in the specification and cannot be entered since it would fall under the consideration of new matter.

In reference to Applicant's argument:

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Claim 1 is patentable because Hill fails to teach the step of adaptively approximating feature vectors on the basis of statistical distribution of feature vector data in the feature vector data space. Although Hill discloses the identification and creation of a feature vector representing a first document, as cited by the Examiner, Hill fails to disclose that the feature vector is adaptively approximated on the basis of statistical distribution of feature vector data in the feature vector data space. To the contrary, Hill discloses that the prior distribution for the indexing parameter (λ) represents the distribution of (λ), not of the feature vector data, across the entire database of documents (col. 3, lines 55-59). The Examiner notes that adaptively is synonymous with "fit" but Applicants request the Examiner to point out where "fit" is disclosed in the reference in the manner claimed.

Examiner's response:

Paragraph 3 above applies. Hill creates a feature vector in the feature vector space by identifying a property of a document to which the feature vector is fit. Such properties have statistical representation (Hill, col 3, lines 29-59).

In reference to Applicant's argument:

In addition, Applicants submit that claim 2 is patentable because Hill fails to teach each and every element of the claim. As explained above, Hill fails to teach the measuring of the statistical distribution of the feature vector data in the feature vector data space.

Examiner's response:

Paragraph 3 above applies. Hill creates a feature vector in the feature vector space by identifying a property of a document to which the feature vector is fit. Such properties have statistical representation (Hill, col 3, lines 29-59).

In reference to Applicant's argument:

In addition, Hill fails to teach the step of estimating marginal distribution of the feature vector data using the statistical distribution. In the passage cited by the Examiner as teaching the claimed step of estimating, Hill teaches the marginal distribution of z_j ; however, z_j is not the feature vector data, but a set of training vectors used to generate an estimate of $p(X)$ (col. 4, lines 44-46) which is merely the distribution of the indexing parameter (col. 3, line 64). The relationship of the cited elements differs from that of claim 2.

Examiner's response:

Paragraph 3 above applies. Feature vector data includes relationship descriptors such as indexing parameters. Hence, the Hill anticipation as further noted by the applicant.

In reference to Applicant's argument:

Furthermore, Hill fails to teach the claimed step of dividing the estimated marginal distribution into a plurality of grids in which a probability of disposing the feature vector data in each grid is uniform. In Hill, there is no mention of any grid, and the figures referenced by the Examiner only "illustrate tables showing examples of generating relevance between a 'query' patent and the two other 'document' patents." (col. 8, lines 51-54). The Examiner has not presented any evidence which makes clear that the step of dividing the estimated marginal distribution into a plurality of grids based on marginal distribution and probability of disposing a feature vector data in each grid is uniform is necessarily present in the reference, and that it would be so recognized by persons of ordinary skill.

Examiner's response:

Paragraph 3 above applies. Tables are grids. The concept of uniformity is not defined in the specification. Hill has uniform tables, i.e. Fig. 5A, Fig. 5B.

Claim Rejections - 35 USC § 112

6. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

7. Claim 2-16 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the enablement requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention. It appears that it is the intention of the Invention to transform a statistical distribution into multidimensional statistical distribution (joint density function) from which the joint

density functions related to the dimensionality can be identified. Integrating across the space of the joint density function, one can arrive at the marginal density function and hence one begins to develop the grid. This process is not straightforward and would require extensive experimentation to replicate the invention. A grid is two-dimensional and yet the process is n dimensional. Fig. 2 illustrates a case where data joint distribution is not uniform but agglomerated even though the marginal distribution of the data is uniform in each dimension (specification, page 6, lines 1-3). Uniform conveys that the probability of a given event in a given space is equally likely. Fig. 2 does not convey much information and certainly since the marginal distribution comes about from the integration of the joint density function, the question of how uniformity is achieved is not sufficiently conveyed from the specification. Simply stated, the specification does not enable the invention.

Claim Rejections - 35 USC § 102

8. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

9. Claims 1 and 2 are rejected under 35 U.S.C. 102(b) as being anticipated by Hill (U. S. Patent 5,713,016 referred to as **Hill**).

Claim 1

Hill anticipates (a) adaptively approximating feature vectors on the basis of statistical distribution of feature vector data in the feature vector data

Space (**Hill**, col 3, lines 29-59; Examiner's Note: adaptively is synonymous with fit).

Claim 2

Hill anticipates (a-1) measuring the statistical distribution of the feature vector data in the feature vector data space (**Hill**, col 3, lines 29-59); (a-2) estimating marginal distribution of the feature vector data using the statistical distribution (**Hill**, col 4, lines 40-65; col 7, lines 43-67); (a-3) dividing the estimated marginal distribution into a plurality of grids in which a probability of disposing the feature vector data in each grid is uniform (**Hill**, col 8, lines 4-56); and (a-4) indexing the feature vector data space using the divided grids (**Hill**, col 8, lines 4-56; EN: if the statistics are developed using a joint density function of n variable configuration, each variable has an individual density function referred to as a marginal density function and the distribution function that they generate are the marginal distributions or z_j of Hill at col 8, line 67; the graphs of figure 5 illustrate tables or grids with relevance information and uniform disposition).]

Conclusion

10. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

11. Claims 1-16 are rejected.

Correspondence Information

Any inquiry concerning this information or related to the subject disclosure should be directed to the Examiner, Joseph P. Hirl, whose telephone number is (703) 305-1668. The Examiner can be reached on Monday – Thursday from 6:00 a.m. to 4:30 p.m.

If attempts to reach the Examiner by telephone are unsuccessful, the Examiner's supervisor, Anil Khatri can be reached at (703) 305-0282.

Any response to this office action should be mailed to:

Commissioner of Patents and Trademarks,
Washington, D. C. 20231;

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or faxed to:

(703) 746-7239 (for formal communications intended for entry);

or faxed to:

(703) 746-7290 (for informal or draft communications with notation of
"Proposed" or "Draft" for the desk of the Examiner).

Hand-delivered responses should be brought to:

Receptionist, Crystal Park II
2121 Crystal Drive,
Arlington, Virginia.

Joseph P. Hirl



January 14, 2004



ANIL KHATRI
SUPERVISORY PATENT EXAMINER